



# STPS30L40CG/CT/CW

## LOW DROP POWER SCHOTTKY RECTIFIER

### MAJOR PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	2 x 15 A
$V_{RRM}$	40 V
$T_j(\text{max})$	150 °C
$V_F(\text{max})$	0.50 V

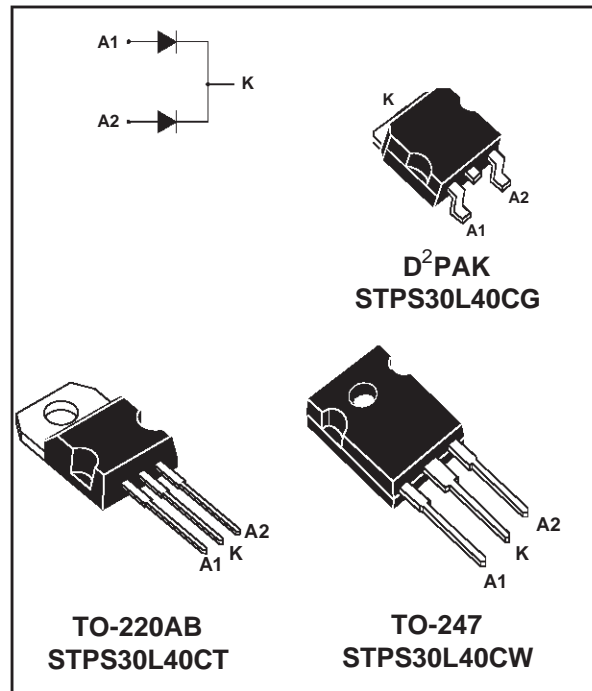
### FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- LOW THERMAL RESISTANCE
- AVALANCHE RATED

### DESCRIPTION

Dual center tap schottky rectifiers suited for switchmode power supply and high frequency DC to DC converters.

Packaged in TO-247, TO-220AB and D<sup>2</sup>PAK these devices are intended for use in low voltage, high frequency inverters, free-wheeling and polarity protection applications.



### ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter		Value	Unit
$V_{RRM}$	Repetitive peak reverse voltage		40	V
$V_{RRSM}$	Repetitive peak surge reverse voltage	$t_p = 0.5\text{ms}$ $\delta = 0.025$	45	V
$I_{F(RMS)}$	RMS forward current		30	A
$I_{F(AV)}$	Average forward current	$T_c = 135^\circ\text{C}$ $\delta = 0.5$	Per diode: 15 Per device: 30	A
$I_{FSM}$	Surge non repetitive forward current	$t_p = 10\text{ms}$ Sinusoidal	220	A
$I_{RRM}$	Peak repetitive reverse current	$t_p = 2\mu\text{s}$ square $F = 1\text{kHz}$	1	A
$I_{RSM}$	Non repetitive peak reverse current	$t_p = 100\mu\text{s}$ square	3	A
$T_{stg}$	Storage temperature range		- 65 to + 150	°C
$T_j$	Maximum operating junction temperature *		150	°C
$dV/dt$	Critical rate of rise of reverse voltage		10000	V/ $\mu\text{s}$

\* :  $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th(j-a)}}$  thermal runaway condition for a diode on its own heatsink

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## THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	1.60	$^{\circ}\text{C/W}$
		Total	0.85	
$R_{th(c)}$		Coupling	0.10	$^{\circ}\text{C/W}$

When the diodes 1 and 2 are used simultaneously :  
 $\Delta T_j(\text{diode 1}) = P(\text{diode 1}) \times R_{th(j-c)}(\text{Per diode}) + P(\text{diode 2}) \times R_{th(c)}$

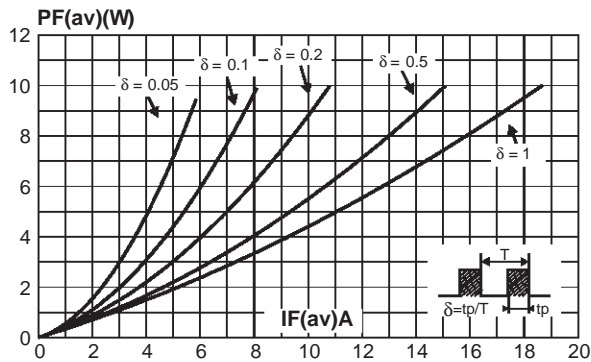
## STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
$I_R^*$	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			360	$\mu\text{A}$
		$T_j = 100^{\circ}\text{C}$			20	50	$\text{mA}$
$V_F^*$	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 15\text{ A}$			0.55	V
		$T_j = 125^{\circ}\text{C}$	$I_F = 15\text{ A}$		0.42	0.50	
		$T_j = 25^{\circ}\text{C}$	$I_F = 30\text{ A}$			0.74	
		$T_j = 125^{\circ}\text{C}$	$I_F = 30\text{ A}$		0.59	0.67	

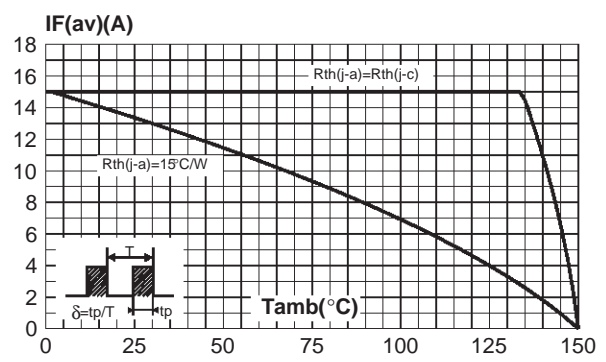
Pulse test : \*  $t_p = 380\ \mu\text{s}$ ,  $\delta < 2\%$

To evaluate the conduction losses use the following equation :  
 $P = 0.330 \times I_{F(AV)} + 0.011 I_{F(RMS)}^2$

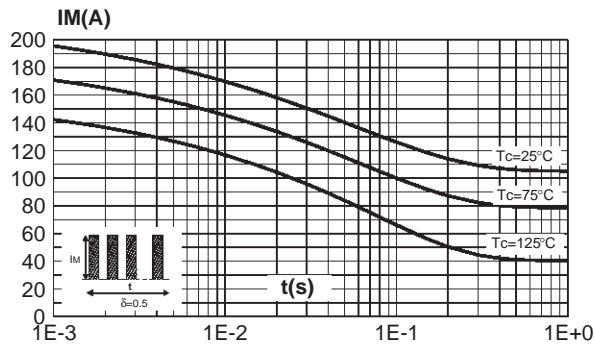
**Fig. 1:** Average forward power dissipation versus average forward current (per diode).



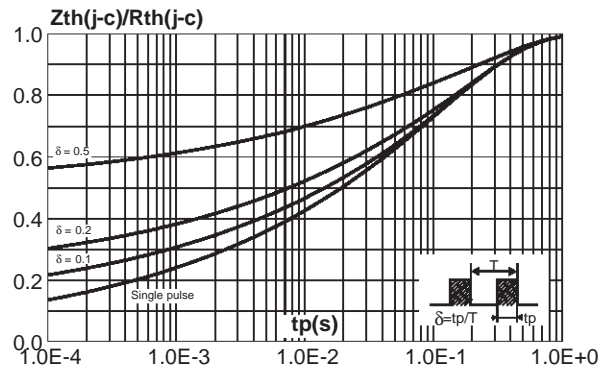
**Fig. 2:** Average current versus ambient temperature ( $\delta=0.5$ ) (per diode).



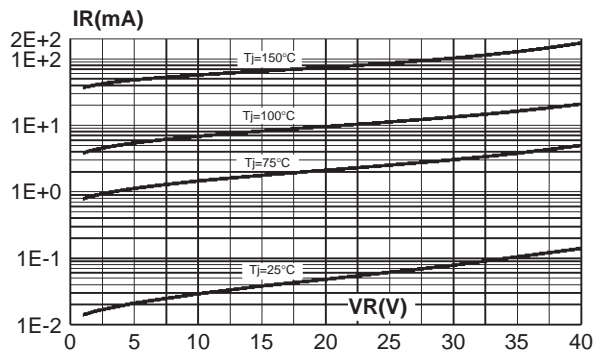
**Fig. 3:** Non repetitive surge peak forward current versus overload duration (maximum values) (per diode).



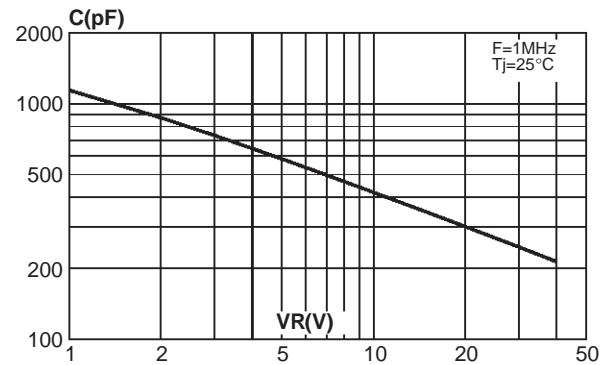
**Fig. 4:** Relative variation of thermal transient impedance junction to case versus pulse duration.



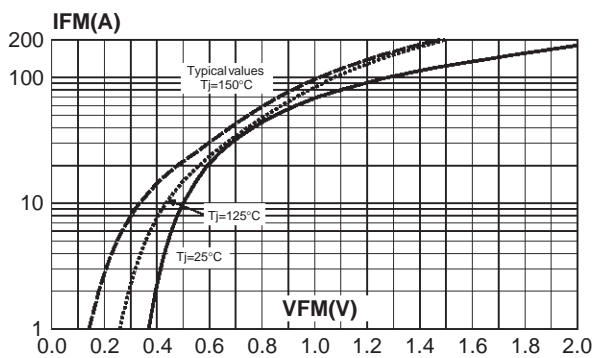
**Fig. 5:** Reverse leakage current versus reverse voltage applied (typical values) (per diode).



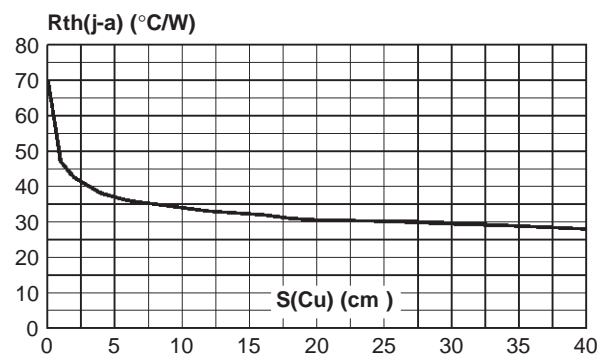
**Fig. 6:** Junction capacitance versus reverse voltage applied (typical values) (per diode).



**Fig. 7:** Forward voltage drop versus forward current (maximum values) (per diode).

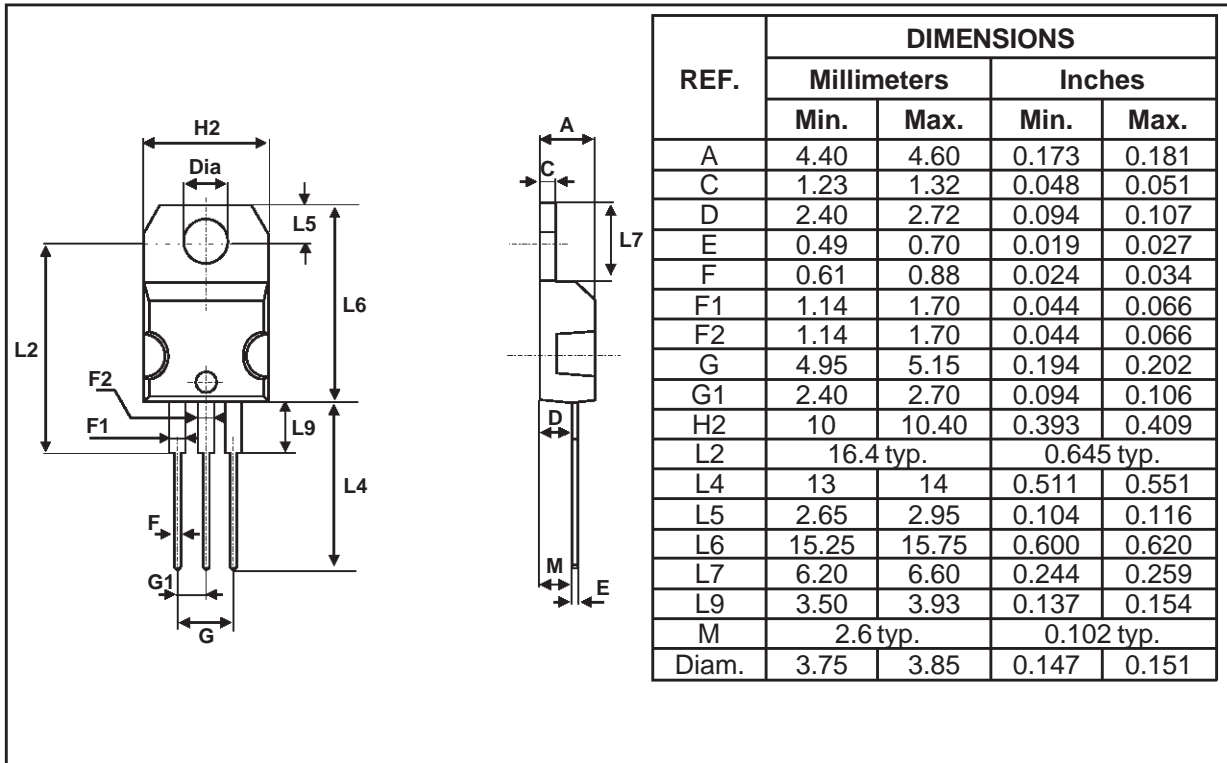


**Fig. 8:** Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35µm) (STPS30L40CG only).



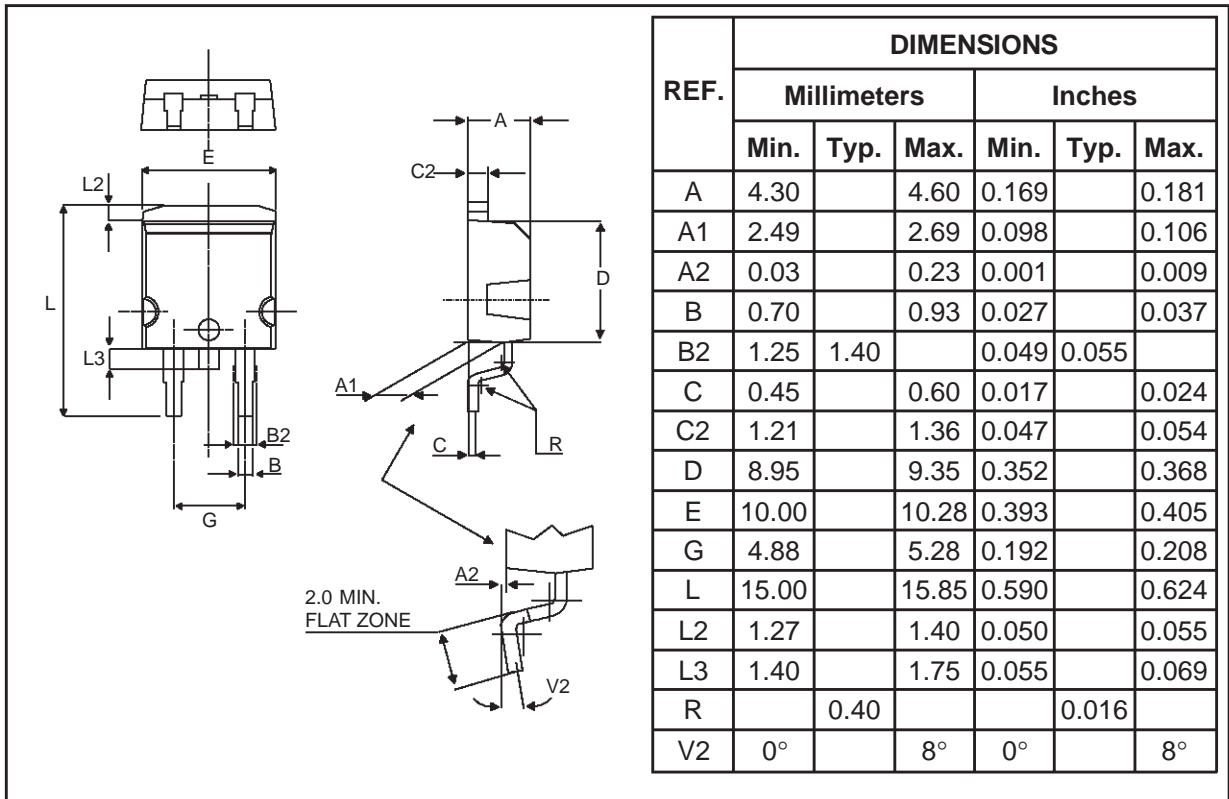
# STPS30L40CG/CT/CW

## PACKAGE MECHANICAL DATA TO-220AB



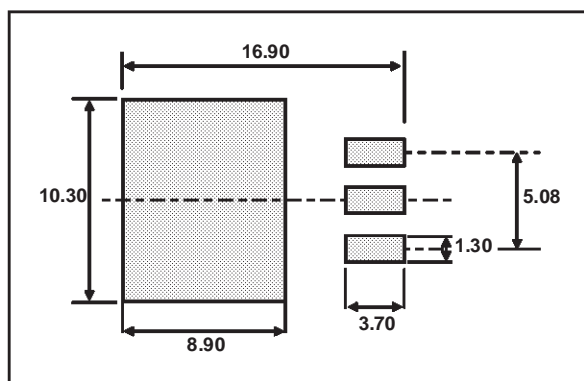
- Cooling method : C
- Recommended torque value : 0.55 m.N
- Maximum torque value : 0.70 m.N

**PACKAGE MECHANICAL DATA**  
D<sup>2</sup>PAK



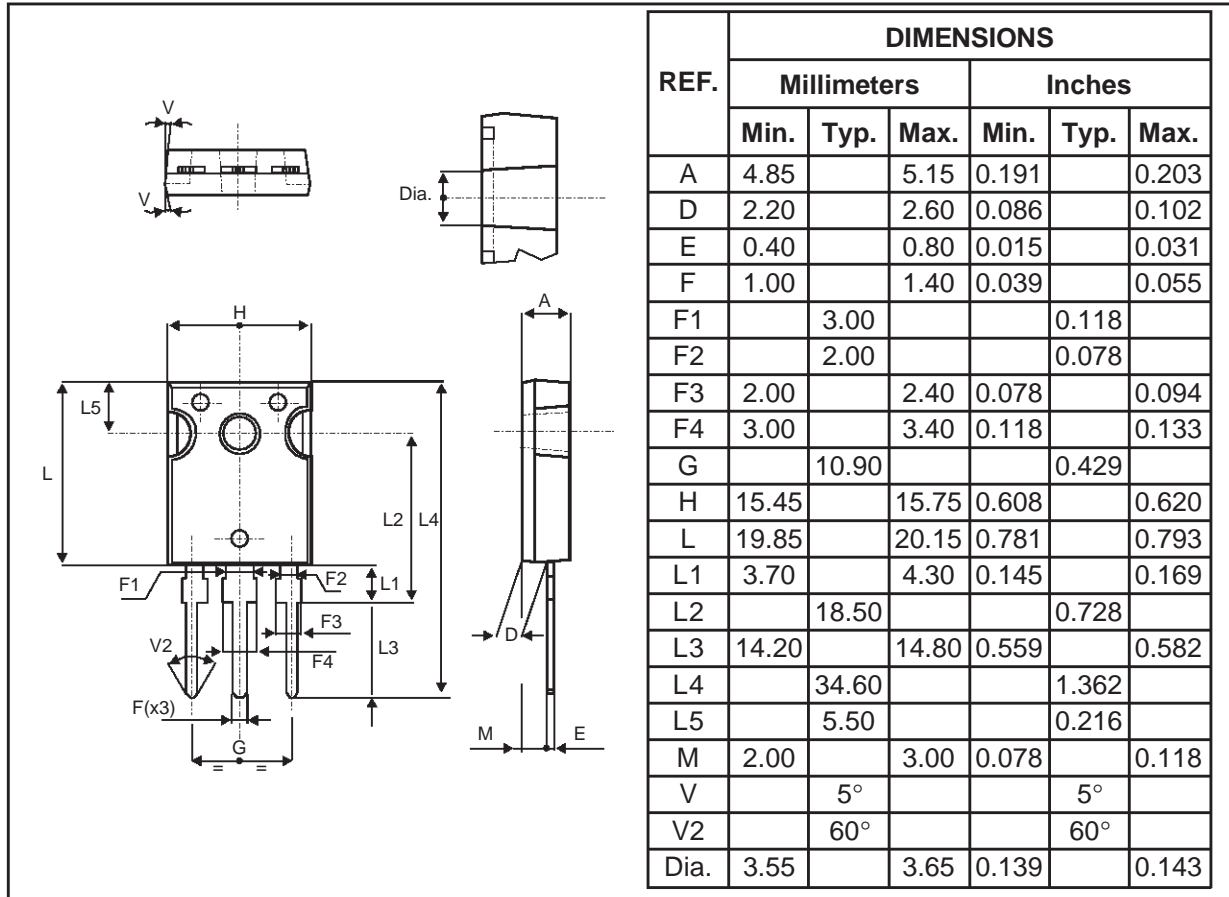
■ Cooling method : by conduction (method C)

**FOOT PRINT (in millimeters)**  
D<sup>2</sup>PAK



# STPS30L40CG/CT/CW

## PACKAGE MECHANICAL DATA TO-247



- Cooling method : C
- Recommended torque value : 0.8m.N
- Maximum torque value : 1.0m.N

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS30L40CT	STPS30L40CT	TO-220AB	2g	50	Tube
STPS30L40CG	STPS30L40CG	D <sup>2</sup> PAK	1.8g	50	Tube
STPS30L40CG-TR	STPS30L40CG	D <sup>2</sup> PAK	1.8g	500	Tape & reel
STPS30L40CW	STPS30L40CW	TO-247	4.4g	30	Tube

- Epoxy meets UL94,V0

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